INCH-POUND

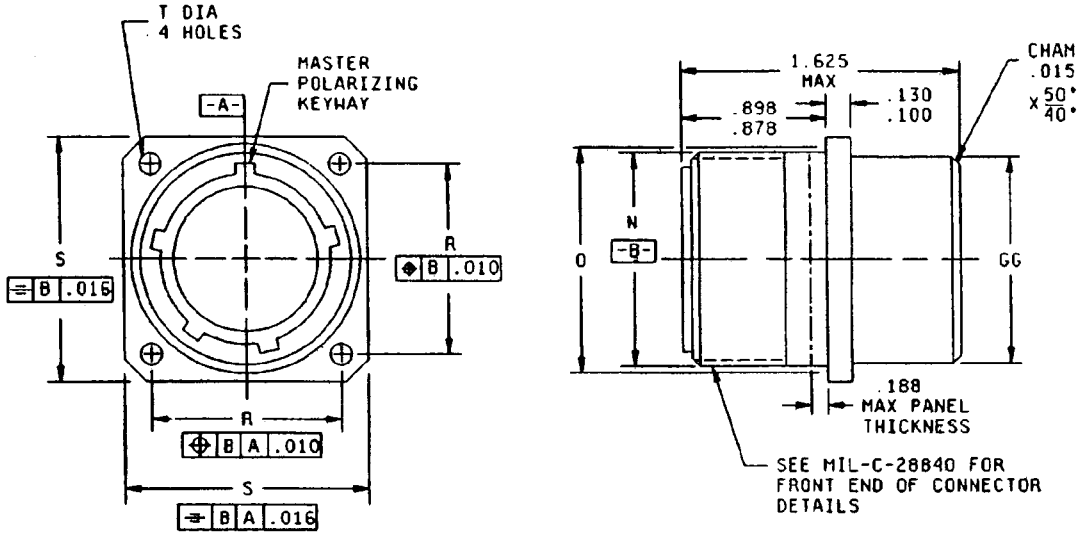
MIL-C-28840/12C(EC)
14 January 93
SUPERSEDING
MIL-C-28840/12B(EC)
26 May 1981

MILITARY SPECIFICATION SHEET

CONNECTORS, ELECTRICAL, SCREW THREADS, HIGH DENSITY, HIGH SHOCK, SHIPBOARD, CRIMP CONTACTS RECEPTACLE, BOX MOUNTING, CLASSES D AND DS

This specification is approved for use by the Space and Naval Warfare Systems Command, Department of the Navy and is available for use by all Departments and Agencies of the Department of Defense.

The requirements for acquiring the product described herein shall consist of this specification sheet and the issue of the following specification listed in that issue of the Department of Defense Index of Specifications and Standards (DODISS) specified in the solicitation: MIL-C-28840.

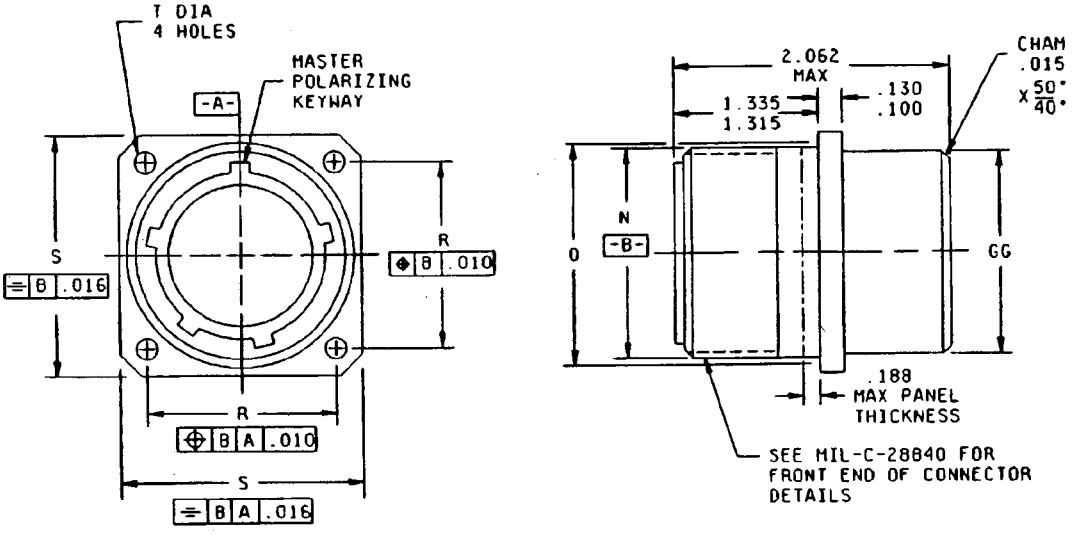


Inches	mm	Inches	mm	Inches	mm
.010	0.25	.100	2.54	.878	22.30
.015	0.38	.130	3.30	.898	22.81
.016	0.41	.188	4.78	1.625	41.28

NOTES:
1. Dimensions are in inches.
2. Metric equivalents are given for general information only.

FIGURE 1. Dimensions and configurations for 1.625 inch max length.

(C) denotes change.



Inches	mm	Inches	mm	Inches	mm
.010	0.25	.100	2.54	1.315	33.40
.015	0.38	.130	3.30	1.335	33.91
.016	0.41	.188	4.78	2.062	52.37

NOTES:
1. Dimensions are in inches.
2. Metric equivalents are given for general information only.

(C) FIGURE 2. Dimensions and configurations for 2.062 inch max length.

TABLE I. Dimensions and configuration for figure 1 and 2.

Designator (see note 3)	N dia max	O ref mtg hole	R T.P. C TO C	S	T	GG dia max	For insert arrangements MIL-STD-1698
A(11)	.750 (19.05)	.812 (20.62)	.750 (19.05)	1.043 (26.49) 1.003 (25.48)	.130 (3.30) .115 (2.92)	.758 (19.25)	Section 90
B(13)	.875 (22.22)	.937 (23.80)	.843 (21.41)	1.158 (29.41) 1.118 (28.40)	.130 (3.30) .115 (2.92)	.880 (22.35)	Section 10
C(15)	1.062 (26.97)	1.124 (28.55)	.968 (24.59)	1.278 (32.46) 1.238 (31.45)	.130 (3.30) .115 (2.92)	1.005 (25.53)	Section 20
D(17)	1.125 (28.58)	1.187 (30.15)	1.015 (25.78)	1.403 (35.64) 1.363 (34.62)	.130 (3.30) .115 (2.92)	1.130 (28.70)	Section 30
E(19)	1.312 (33.32)	1.374 (34.90)	1.140 (28.96)	1.528 (38.81) 1.488 (37.80)	.130 (3.30) .115 (2.92)	1.255 (31.88)	Section 40
F(23)	1.500 (38.10)	1.562 (39.67)	1.281 (32.54)	1.738 (44.15) 1.698 (43.13)	.130 (3.30) .115 (2.92)	1.443 (36.65)	Section 50
G(25)	1.625 (41.28)	1.687 (42.85)	1.392 (35.36)	1.838 (46.69) 1.798 (45.67)	.157 (3.99) .142 (3.61)	1.567 (39.80)	Section 60
H(29)	1.812 (46.02)	1.937 (49.20)	1.568 (39.83)	2.158 (54.81) 2.118 (53.80)	.157 (3.99) .142 (3.61)	1.880 (47.75)	Section 70
J(33)	2.000 (50.80)	2.124 (53.95)	1.734 (44.04)	2.348 (59.64) 2.308 (58.62)	.183 (4.65) .168 (4.27)	2.067 (52.50)	Section 80

NOTES:
1. Dimensions are in inches. Dimensions apply after plating.
2. Metric equivalents are given for general information only.
3. Shell sizes are provided within parentheses for information and are not a part of the designator.
4. Normal mating keyway position shown. For alternate keyway positions, see MIL-C-28840.
5. Connector shall be supplied with resilient wire separator in lieu of a wire seal grommet.

REQUIREMENTS:

Dimensions and configurations: See figures 1 and 2, and tables I through IV.

This connector mates with MIL-C-28840/16, /17, /18, /19, /26, /28, and /29.

Insert arrangements: See the section of MIL-STD-1698 corresponding to the desired shell size.

Connectors accessories: See MIL-C-28840 supplement.

Classes code letter:

TABLE II. Classes code letter for figure 1 and 2.

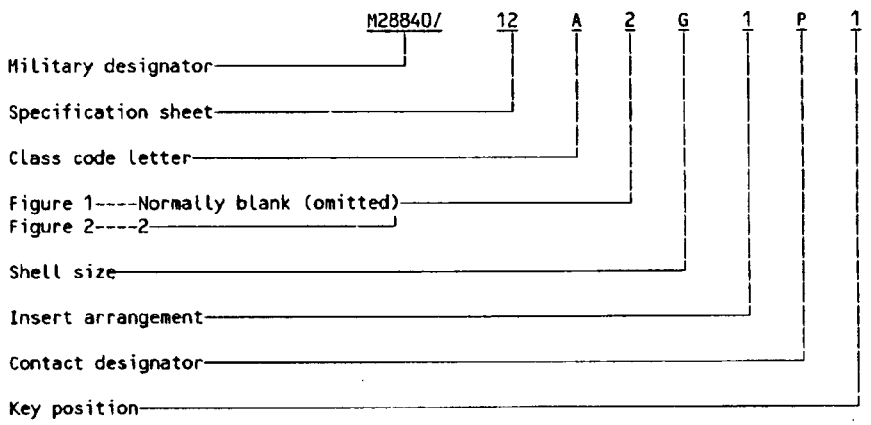
Classes	Code letter
D	A
DS	B

Contacts: Style P or S crimp type.

Shell polarization: 1 through 6, key position.

Installation and removal tool: MIL-I-81969/33 and /34.

Part or Identifying Number (PIN) example:



Qualification:

(C) Qualification samples (for figure 2 only). Two connectors small, medium, and large (A, E, J) shell size with insert arrangements representing typical manufacturing, shall be subjected to the tests listed herein. One sample shall have the pin inserts in the plug and the socket inserts in the box mounting receptacle. The other sample pair shall have the contact gender reverse. One receptacle sample shall be terminated with wire approaching the minimum OD specified in table IV, and the other with maximum OD wire. The mating connectors shall be PIN M28840/26. Qualification of small, medium, large, (A, E, J) shell sizes shall grant qualification of remaining sizes by similarity.

(C) Vibration (for figure 2 only). Complete mated connectors shall be mounted as follows and subjected to the applicable vibration test. Each receptacle shall be mounted on a suitable fixture, which, in turn, shall be attached to a vibration table. A suitable sensor shall monitor the vibration of the receptacle at a point on or near the receptacle. A counterpart plug shall be engaged with the receptacle and held by normal coupling means without the use of safety wire. The wire bundles or cable shall be clamped to nonvibrating points at least 36 inches from the rear of the connectors. The clamping length shall be chosen to avoid resonance of the wire bundles or cables. Mated connector shall be tested in accordance with method 2005, test condition III, of MIL-STD-1344 and also in accordance with the endurance test of MIL-STD-167-1(SHIPS). All contacts shall be wired in series and a current of 100 ±10 milliamperes shall be employed to monitor current flow and indicate discontinuity of contact or interruption of current flow of one microsecond or longer.

High impact shock (for figure 2 only). The connector assemblies that have passed vibration shall then be tested in accordance with MIL-S-901, grade A. The mounting shall be in accordance with the standard mounting for electrical switchboard instruments and other panel mounted equipment (fixture 6D-1 of MIL-S-901). All contacts shall be wired in a series circuit with 100 ± 10 milliamperes flowing through the series circuit during the high impact shock. A suitable device shall be used to monitor the current flow and to indicate any discontinuity of current flow which is one microsecond or longer. The mated connectors shall be held together only by the normal locking device. Cable or wires shall be supported on a stationary frame not closer than 36 inches from the connector assembly.

TABLE III. Test cable and accessory size.

Designator 1/	Cable MIL-C-915	M28840/6 backshell	Tensile load (pounds)
A (11)	TPNW-3	/6-01WB	50
E (19)	2U-19	/6-11WB	75
J (33)	2SU-44	/6-23WB	100

1/ Shell sizes are provided within parentheses for information and are not a part of the designator.

Pin contact stability. The unmated connectors shall have 10 percent of their pin contacts subjected to this test. Gauge pins conforming dimensionally to figure 14 of MIL-C-28840 shall be used. The connector shall be held in a holding device. The forces specified in 3.4.2.6 of MIL-C-28840 shall be applied to the exposed rod as shown on figure 15 of MIL-C-28840. The rate of load application shall not exceed 1 inch (25.4 mm) per minute. The total pin tip displacement shall be measured as shown on figure 15 of MIL-C-28840. The unmated connector shall have all cavities loaded with contacts in which minimum OD wire (see table IV) has been crimped. The unmated connectors shall have no backshell attached.

TABLE IV. Wire range accommodations.

Contact size	Wire size	Outside diameter of finished wire (inch) 1/	
		Minimum	Maximum
20-20	24	.040	.070
	22	.040	.070
	20	.040	.070
20-22	26	.040	.070
	24	.040	.070
	22	.040	.070
20-28 2/	32	.040	.070
	30	.040	.070
	28	.040	.070

1/ In accordance with MIL-C-915 and MIL-W-16878.
2/ To obtain sealing, wires must be built up to finished wire diameter.

QPL evaluating activity: Defense Electronics Supply Center, (DESC-E), Dayton, OH 45444.

CONCLUDING MATERIAL

Preparing activity:
Navy - EC

Agent:
DLA - ES

(Project 5935-N456)